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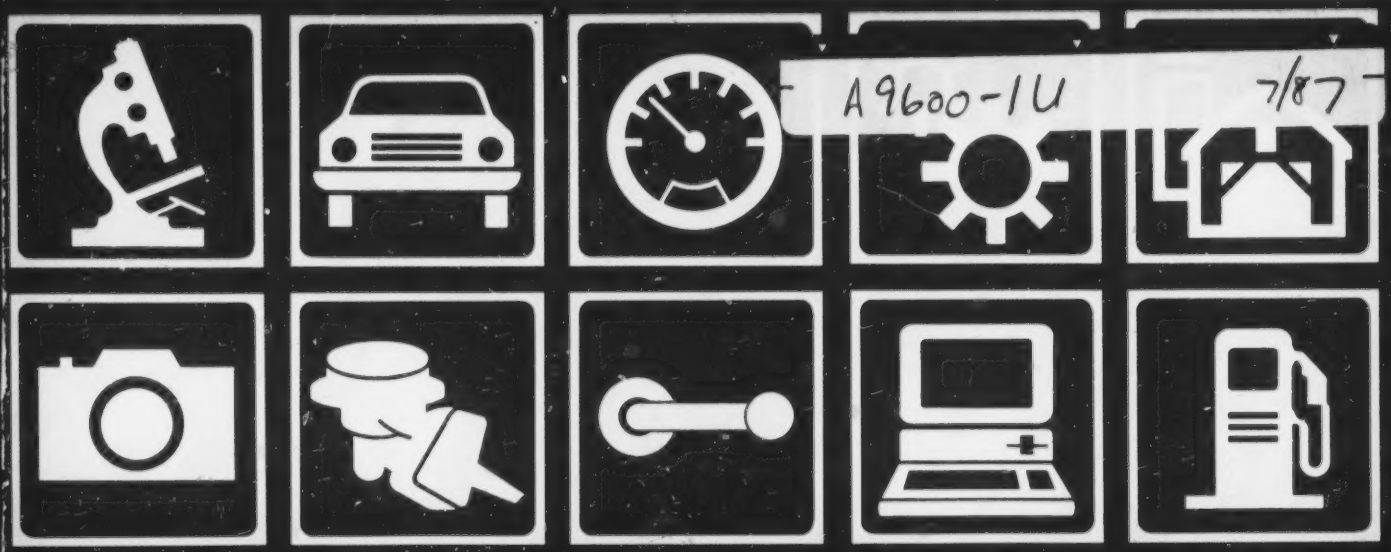
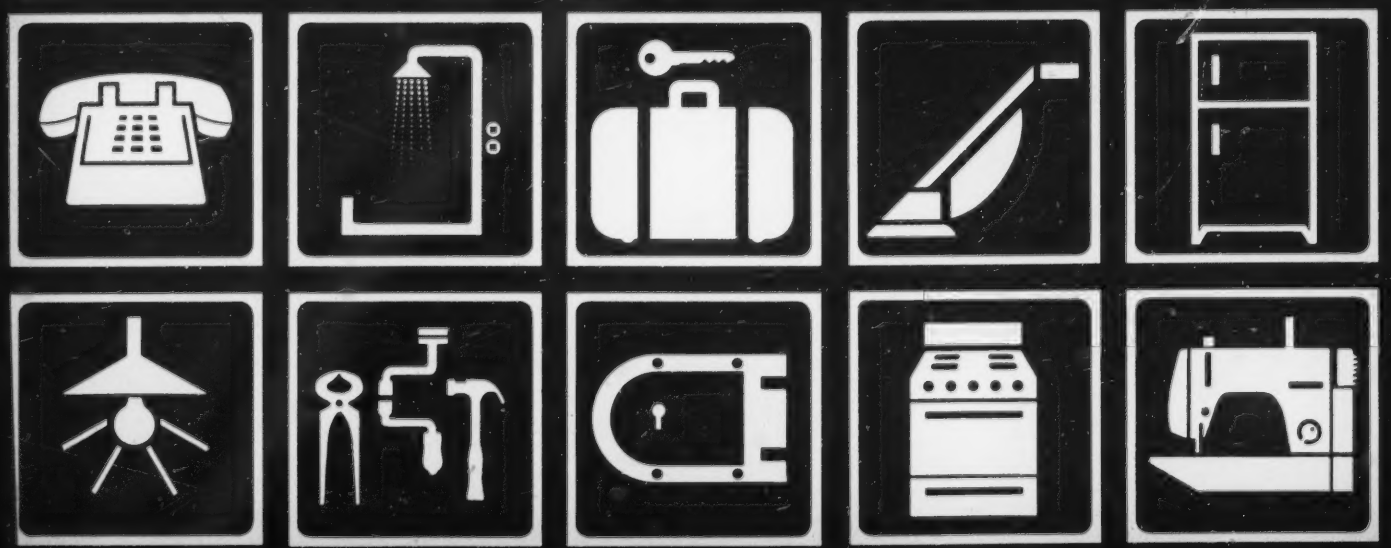
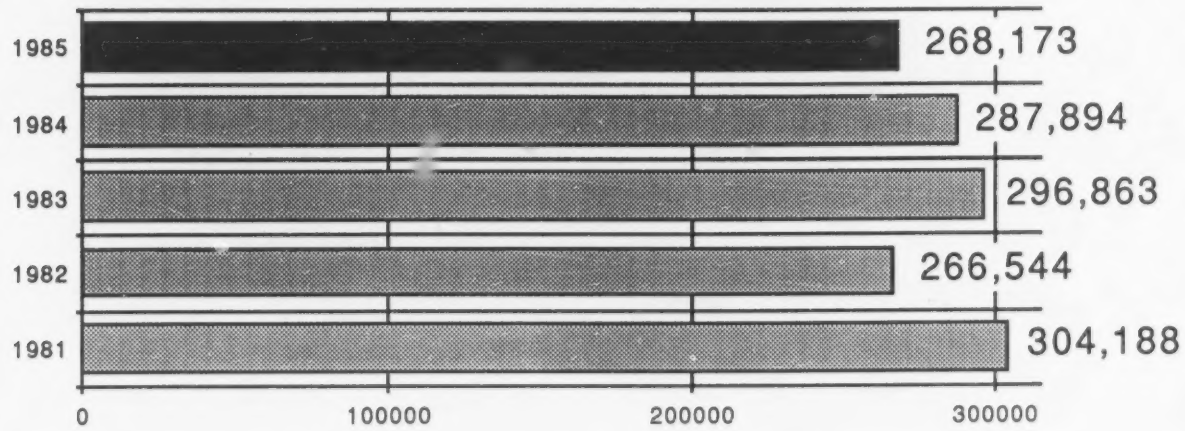


U.S. MARKETS FOR ZINC DIE CASTING 1981-1985

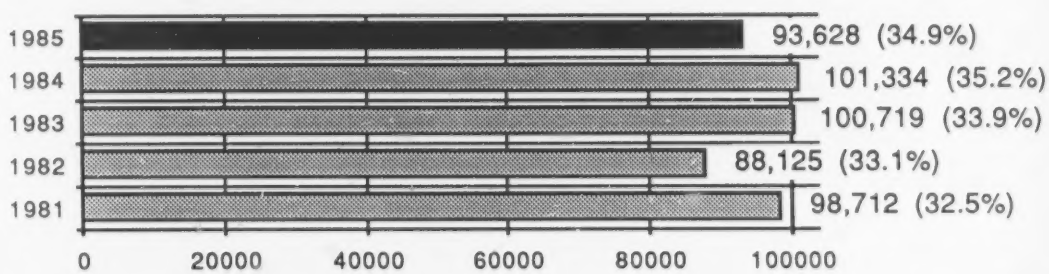


U.S. Zinc Die Casting Tonnage

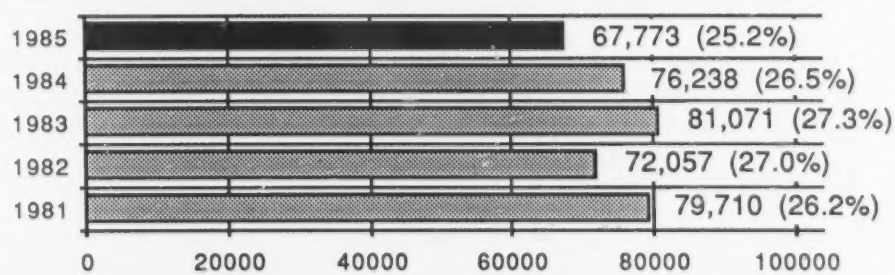


Market-by-Market Analysis (Tons & % of Total)

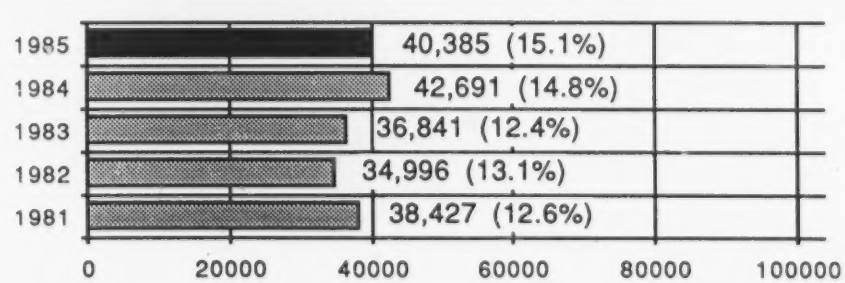
Automotive Components



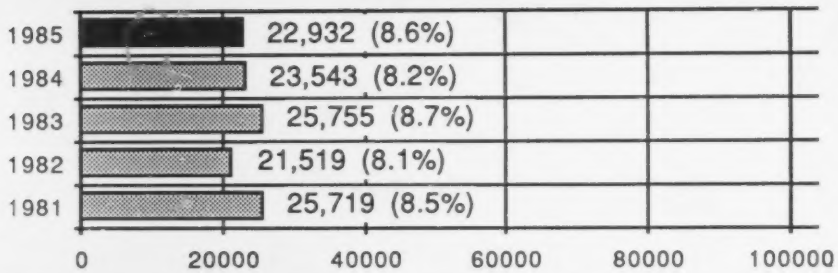
Builders Hardware



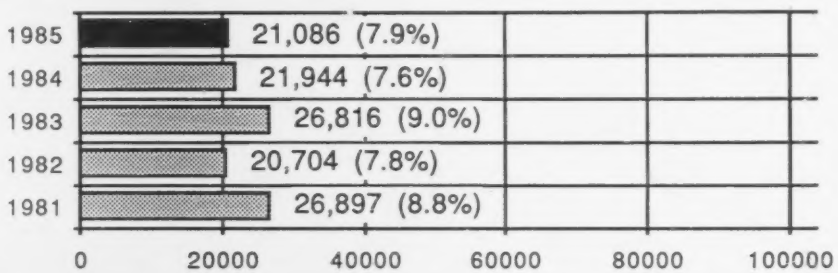
Electrical Components



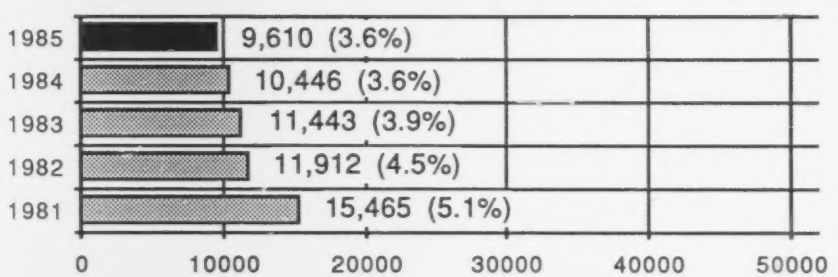
Industrial, Agricultural and Commercial Machinery



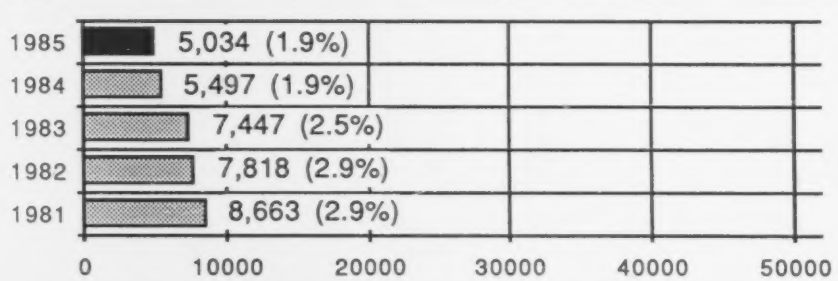
Domestic Appliances



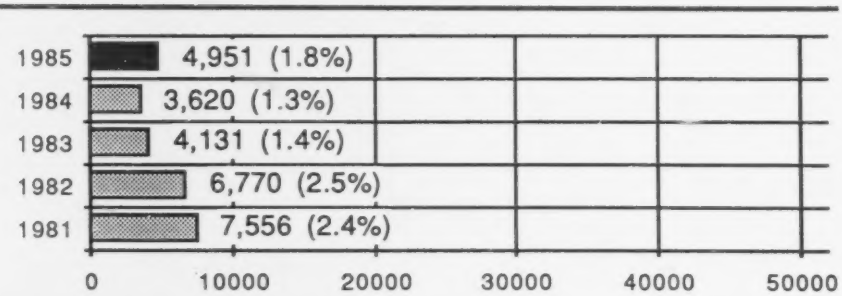
Miscellaneous Industries



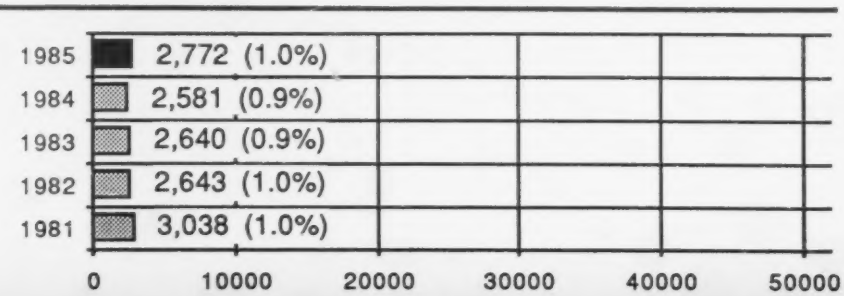
Sporting Goods and Toys



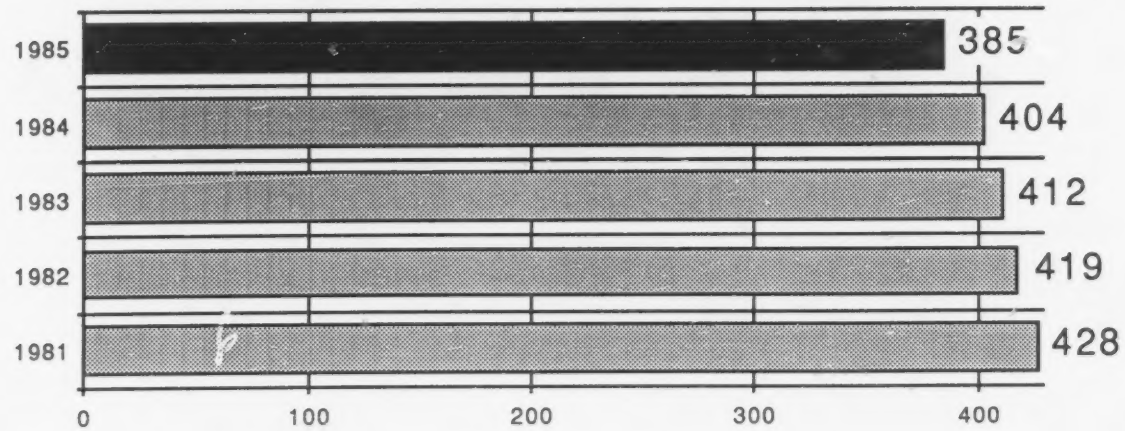
Scientific and Professional Equipment



Sound and Television Equipment

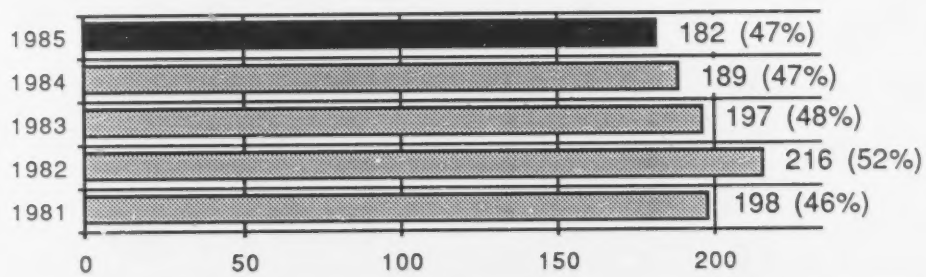


Total Number of U.S. Zinc Die Casters

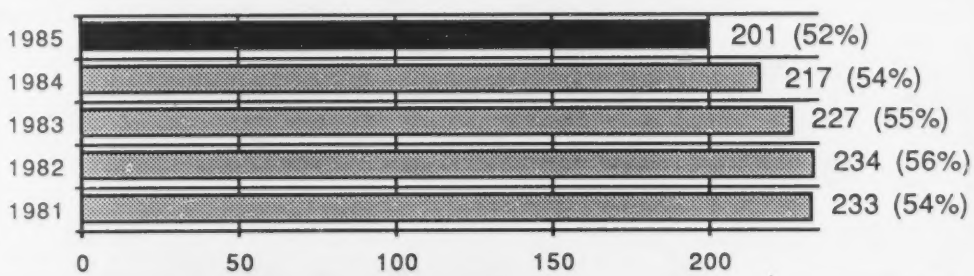


Market-by-Market Analysis (Die Casters & % Participating)

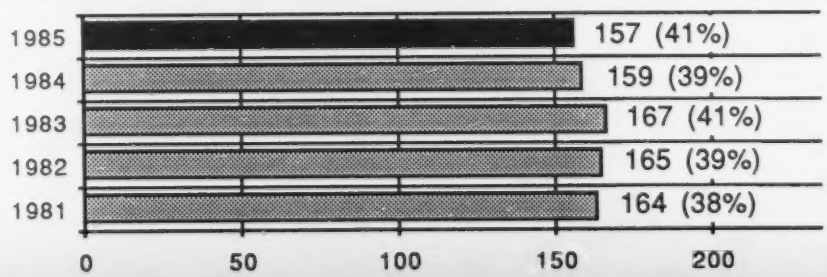
Automotive Components



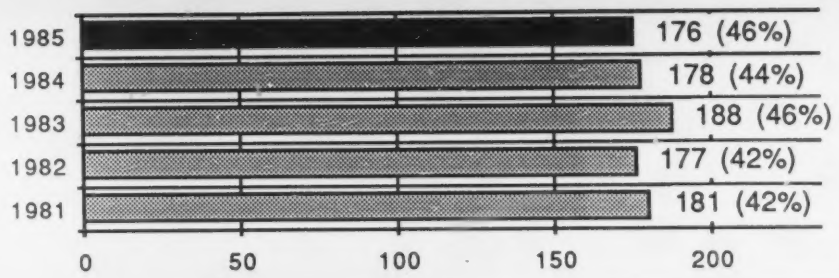
Builders Hardware



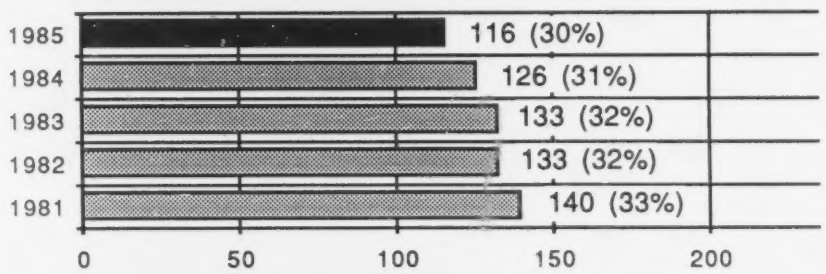
Electrical Components



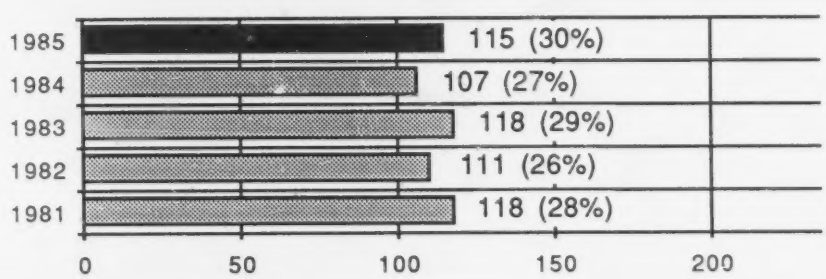
Industrial, Agricultural and Commercial Machinery



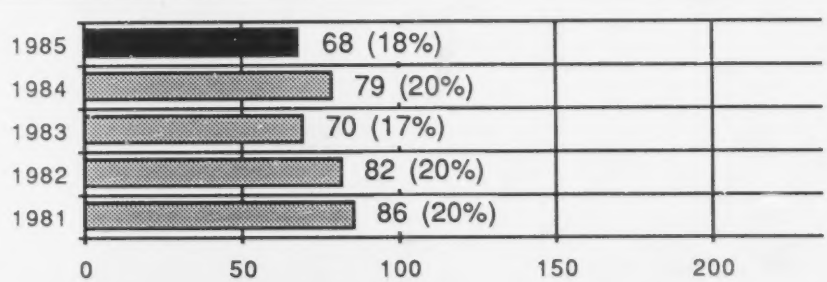
Domestic Appliances



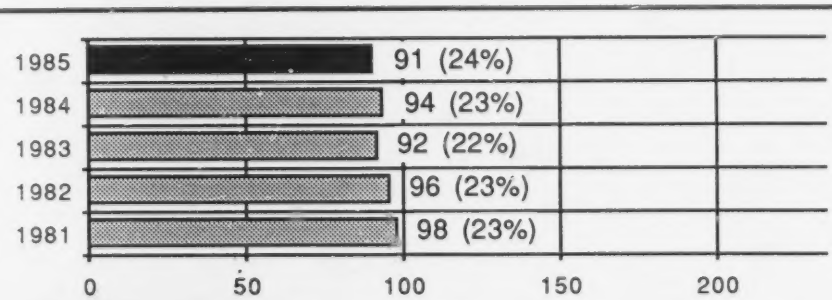
Miscellaneous Industries



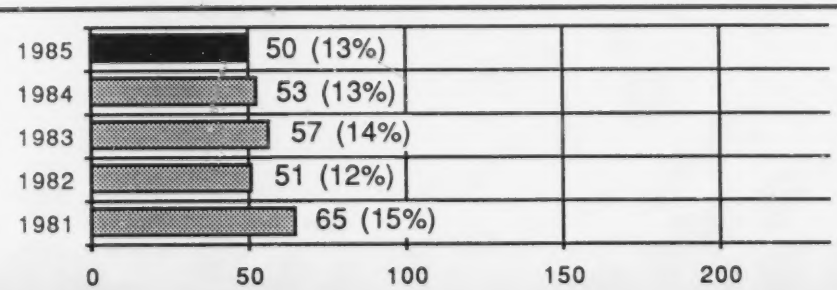
Sporting Goods and Toys



Scientific and Professional Equipment



Sound and Television Equipment



U.S. Markets for Zinc Die Casting

Consumption of domestically produced zinc die castings declined 6.9% by weight in 1985, mirroring the downturn in other material consumption areas during that year. The drop is charted in this survey by Zinc Institute (ZI), which attributes the loss to the general slowdown in the economy and the increasing ability of die casters to make more components from every ton of zinc they use.

Based on figures supplied directly to ZI by the nation's 385 zinc die casters, the survey reports that the parts makers utilized 268,173 tons of zinc in 1985, compared to 287,894 the previous year. The 19,721 ton decrease comes on the heels of an 8,969 ton drop in 1984. However, the 1985 total remained above the 266,544 tons recorded in 1982.

Sluggishness of the U.S. economy and the growing use of Thinwall die design were the two main factors cited by ZI for the latest dip. "In order to compete with other materials on a cost-per-part basis, zinc die casters have to make the most of every pound of zinc they run through their machines," said ZI president Werner T. Meyer. "As a result, now more than ever, they rely on Thinwall design parameters to make parts that are more lightweight and therefore are more cost-efficient."

The Institute also noted that an increasing number of zinc die castings used in the U.S. are produced overseas, and therefore are not reflected in the survey's tonnage total. "These zinc components are imported either as individual castings, such as plumbing fittings, or as part of a finished product, such as an automobile," said ZI vice president Richard F. Lynch.

A market-by-market analysis of the results reveals that automotive components led all other end-use categories, as has been the case for decades. A total of 182 U.S. die casters built car parts using 93,628 tons of zinc in 1985. Automotive components accounted for a 34.9% share of the total market, compared to 35.2% the year before.

The building components sector placed second with a decline in market share to 25.2%, reflecting reduced construction in the U.S. during 1985. Zinc consumption was 67,773 tons for the end-use, with 201 die casters participating in this segment.

For the second consecutive year, electrical components gained market share, with the percentage rising from 14.8 to 15.1. A total of 40,385 tons of zinc were consumed by by 157 die casters to make the electrical parts.

Another market share winner was the category of industrial, agricultural and commercial machinery, which covers applications ranging from computers to combines. The sector accounted for 8.6% of the overall zinc die casting market in 1985 compared to 8.2% in 1984. Consumption was recorded at 22,932 tons, molded by 176 zinc die casters.

Domestic appliances also registered a market share gain, rising from 7.6% to 7.9%. A total of 116 die casters deployed 21,086 tons of zinc in the end-use in 1985.

Zinc consumption in the miscellaneous industries classification was 9,610 tons—with market share holding steady at 3.6%. The category saw 115 zinc die casters producing such items as tableware, jewelry and ornaments, fancy goods and souvenirs, zippers, buttons, and buckles.

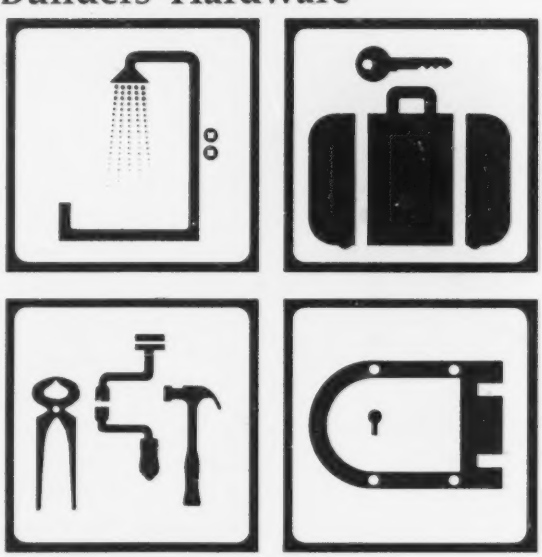
Sporting goods and toys comprised a category played by 68 casters, who used 5,034 tons zinc in 1985. The market share here remained at 1.9%.

Scientific and professional equipment accounted for 4,951 tons. The classification gained in market share from 1.3% to 1.8%, with 91 zinc die casters participating.

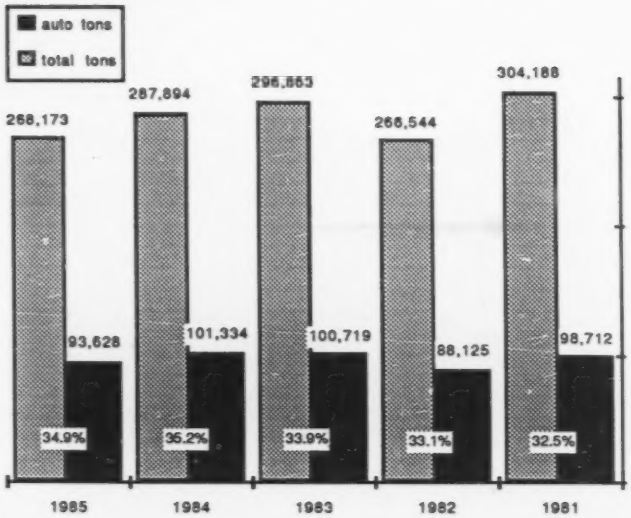
The final end-use sector—sound and television equipment—also turned up the volume in market share, increasing from 0.9% to 1.0%. A total of 2,772 tons were utilized by 50 zinc die casters.

Automotive Components

Builders Hardware

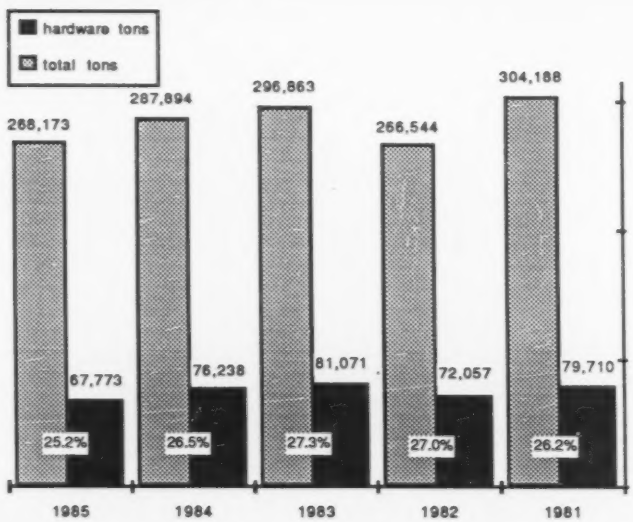


Electrical Components



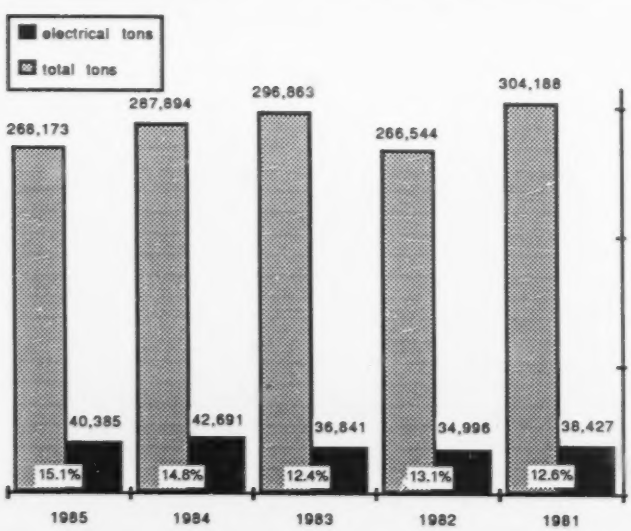
Zinc die castings manufactured for the automotive market at 93,628 tons were 34.9% of total 1985 sales. ThinWall zinc continued to be an important factor with the introduction of 1986 models in the fall of 1985. The lighter castings increased zinc applications, but also reduced the amount of zinc used in each component. Die casters in this market were 182 in number, 47% of the total.

The market consists of handles and locks, mechanical components, electrical components, body hardware and trim, lamp and lighting fittings, instruments and other automotive components. Pounds of zinc die castings per average car, again reflecting the increased use of ThinWall, dropped from nearly 22 in the 1984 models, to 20.4 in the 1985 models, and 19.7 in 1986.



Builders hardware, second largest market for zinc at 67,773 tons, took 25.2% of the market. Die casters involved were 201, 52% of the total.

The market covers door and window hardware, locks and keys, furniture and cabinet hardware, hand tools and cutlery, bathroom and plumbing fittings, general hardware, marine hardware, and luggage hardware.

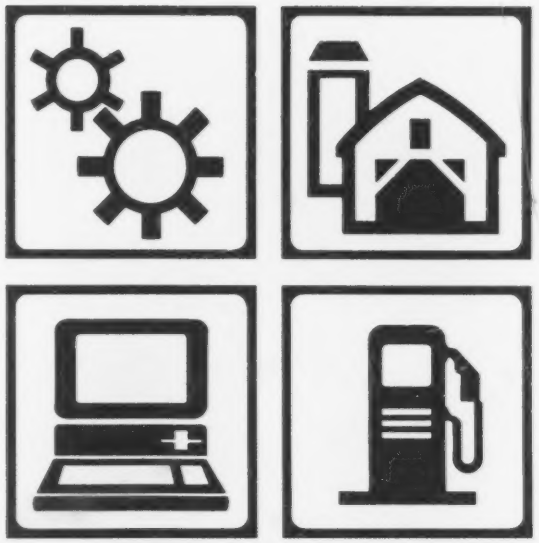


Electrical components reached 40,385 tons for 15.1% of the market and a clear hold on third place among zinc die cast markets. The end-use is shared by 157 die casters, 41% of the producers.

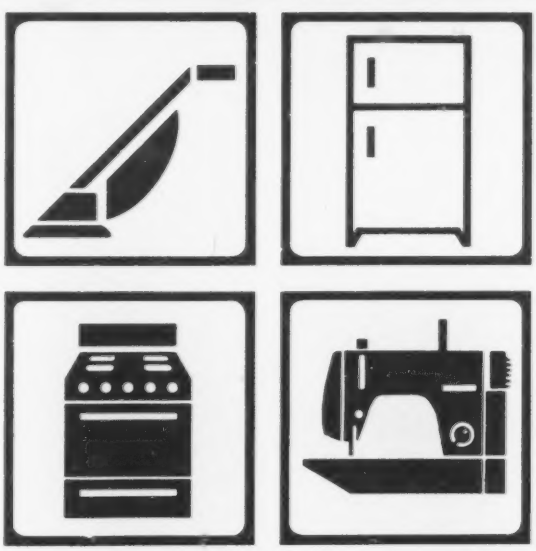
The market includes conduit fittings, switches, plugs and sockets, telecommunication equipment, switch gear, pole-line hardware, motor components, lighting fixtures and equipment.

This industrially oriented market, which is more stable than consumer goods, is nevertheless strongly affected by construction, particularly in the residential housing sector.

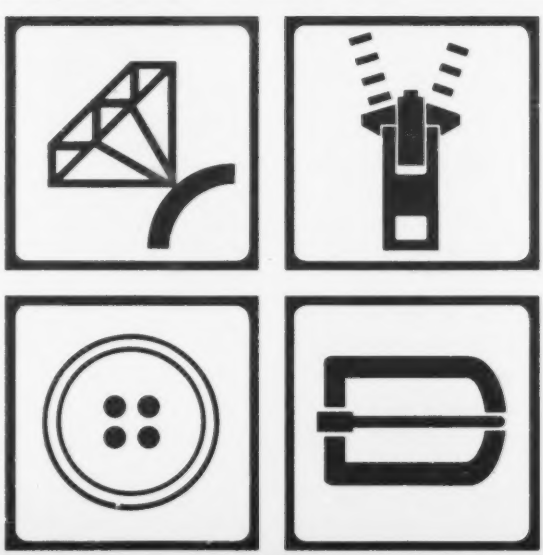
Industrial, Agricultural and Commercial Machinery

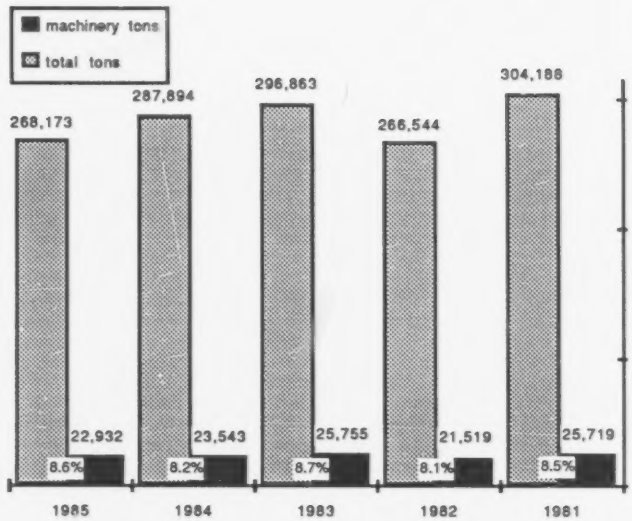


Domestic Appliances



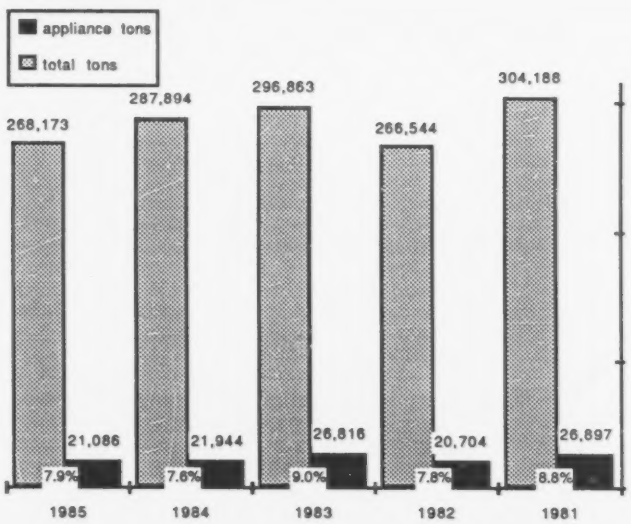
Miscellaneous Industries





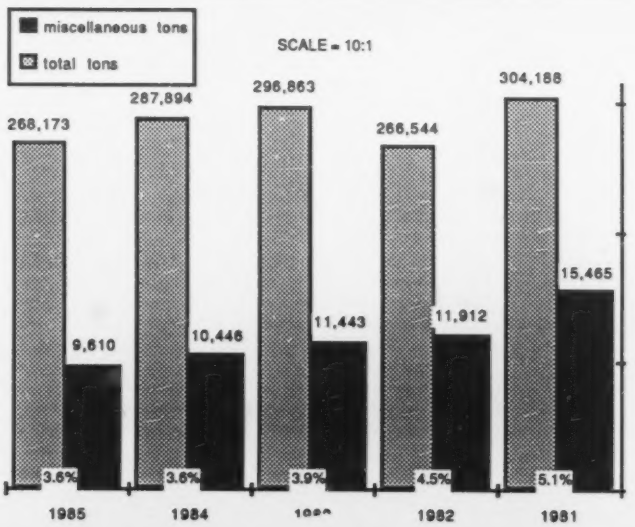
Industrial, agricultural and commercial machinery accounted for 22,932 tons and 8.6% of the total. 176 die casters, 46%, were in this market.

The end-use segment includes copying equipment, computers, office equipment, business machines, agricultural and food machinery, vending machines, machine tools, power tools, central heating and air conditioning, power-operated garden equipment, lawn mowers, snow blowers and gasoline service station equipment.



This market at 21,086 tons, 7.9%, remained relatively stable in 1985. However, the number of die casters, 116 or 30%, dropped.

The market includes vacuum cleaners, floor polishers, refrigerators and freezers, ranges, washing machines and dryers, dishwashers, small appliances, heating appliances, room air conditioners, fans and sewing-machine components.

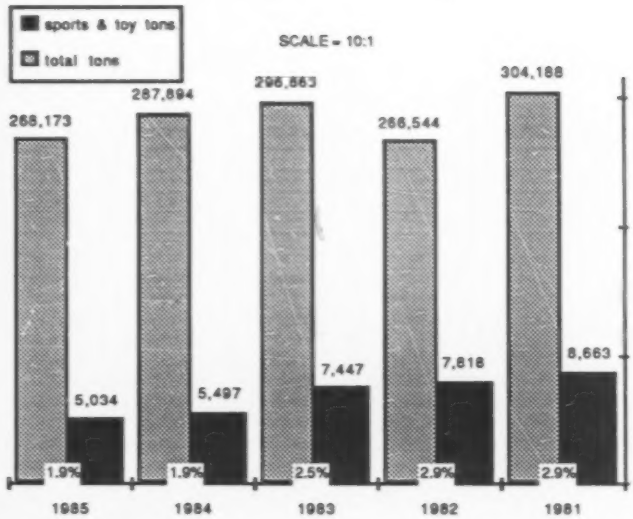


Markets named by relatively few die casters were arbitrarily grouped here. The category decreased to 9,610, or 3.6% of the total. A total of 115 die casters, 30% of them, reported in this category which sold to markets such as tableware, jewelry and ornaments, fancy goods and souvenirs, zippers, buttons and buckles. This was zinc's sixth largest market for 1985.

Sporting Goods and Toys

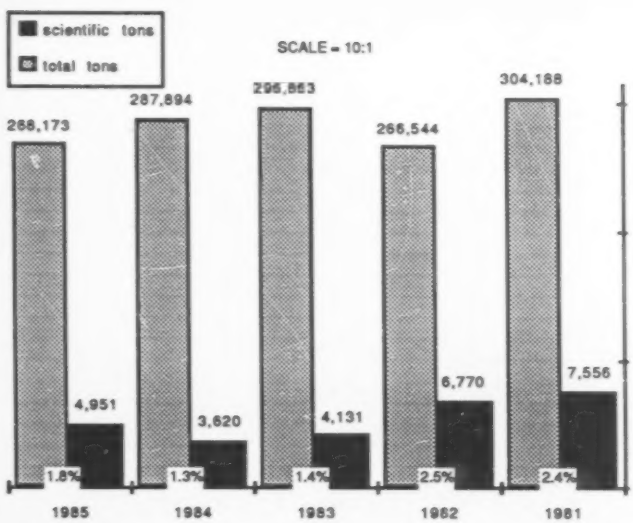
Scientific and
Professional Equipment

Sound and Television
Equipment

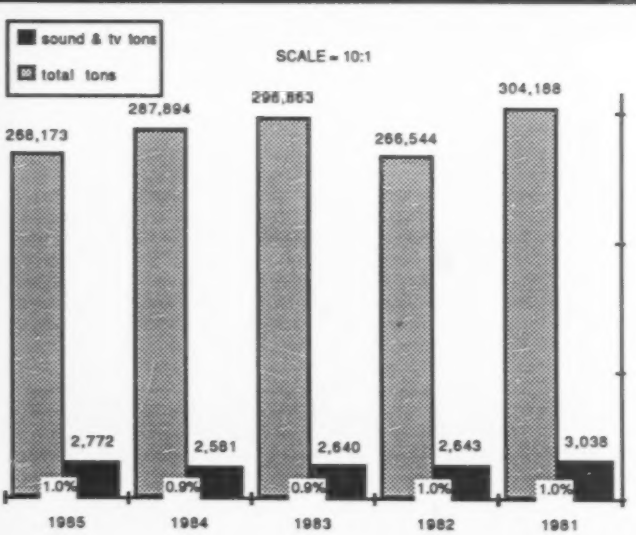


Zinc's die casting production in this category decreased to 5,034 tons, or 1.9% of the total market, remaining in seventh place. Sixty-eight die casters, or 18%, participated.

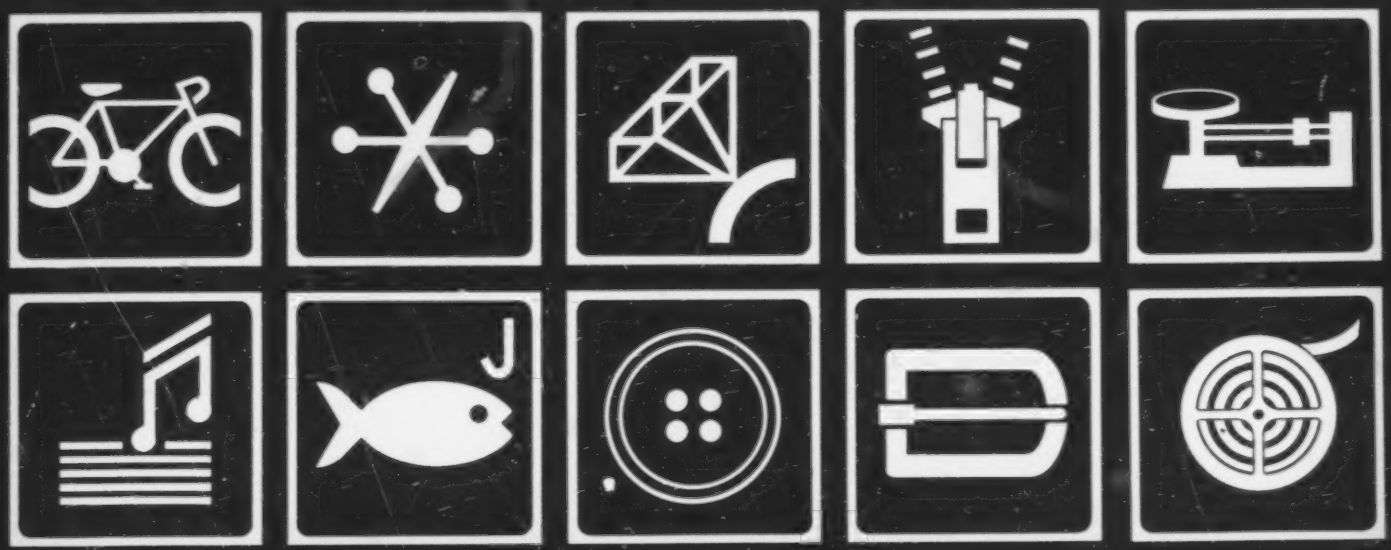
The market consists of toys, musical instruments, and sporting goods.



At 4,951 tons, or 1.8% in 1985, this market increased by over 1,000 tons from the 3,620 tons recorded in 1984. A total of 91 die casters, 24% of the market, sold to makers of valves, scientific instruments, timing devices, cameras and projectors and optical instruments. This was zinc's eighth largest market for 1985.



With 2,772 tons and 1.0% of the market, these consumer-oriented products picked up slightly in 1985. Fifty die casters, 13%, were involved in this market area. It consists of assemblies and parts for radio, television, record and tape players. This was zinc's ninth largest market for 1985.



While every effort has been made to assure that the information given in this booklet is technically correct, Zinc Institute Inc. does not warrant its accuracy.

Zinc Institute Inc.

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